

# South Bay Operations

Flatbeam® Lock-Nut



# **FlatBeam™**

## **LOCK-NUT**

Tridair FlatBeam Lock-Nuts are designed to greatly extend cycle life - 10 to 15 times longer than conventional lock-nuts. Six flexible flat beams provide critical prevailing torque on the bolt without placing abnormal wear on bolt threads. The design prevents destructive shaving of the bolt's thread and adds life to each bolt as well at the lock-nut.

# The Evolution of Self-Locking Nuts

The use of prevailing torque self-locking nuts in aircraft dates back more than forty-five years. During World War II millions of these nuts were used as an alternative to lock washers, cotter pins, safety wiring and staked nuts in high vibration applications.

One of the first Government Specifications release, to insure that the nuts would perform properly, was the AN-N-5. It was **released before 1945**.

The early designs of prevailing torque type nuts, at this time, used a non-metallic collar in the nut to provide an interface with bolt threads to lock the nut to the bolt.

Such nut designs imposed significant weight penalties in the aircraft and the temperature limitation of 250°F. curtailed maximum use of this advancement in fastener design.

Several alternate "all metal designs" became available in the early 50's, and a new specification was released (MIL-N-25027).

Both specifications require Qualification Tests, as well as lot testing. Since the documents have been written with vibration as a critical element, a "Jack Hammer" test was required. To assure that the self-locking device would hold onto the bolt, the **nuts were not seated** as they would be in a typical application.

Presumably this was the reason that **no load was required** on the nuts during the 15 cycle torque test that was also required and used in the lot testing. The vibration test was only used in the Qualification Test.

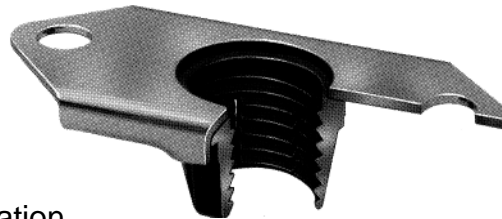
The fallacy of this presumption soon became apparent. In 1961 a test was conducted by a Government agency for the purpose of establishing the torque tension relationships of prevailing torque self-locking nuts. One of the conclusions of the test was, that..."repeated installations of a fastener caused loosening of the locking torque."

The report results stated that, the **"all metal" self-locking nuts that were tested, lost their self-locking torque capability within just a few cycles.**

Both specifications required a *15 cycle self-locking torque test* on every lot. The maximum and minimum torque values, by size, had to fall within certain limits. But the **test still required no seating of the nut.**

In April of 1963, the National Aerospace Standards Committee released specification NAS3350 for 450°-800°F. self-locking nuts. In the room temp torque effectivity test, it requires that nuts be loaded to a seat torque - and maximum torque values and minimum break-away torque values of MIL-N-25027 were required to be met. But this test is only required for 15 cycles!

Studies have confirmed that **many lock-nuts are seated and removed far more than fifteen times during installation, maintenance and inspection.** In AMCP706-134, the U.S. Army reports:



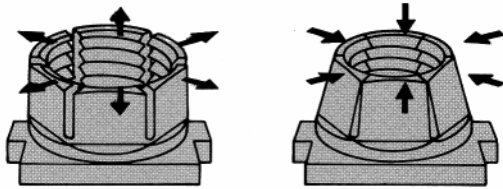
**"Self-locking nuts are intended to replace cotter pins, wiring, lock washers, etc., as a means of keeping a nut tight on its bolt. They contain some means of gripping the threaded member so that relative rotation is impeded or prevented. This feature poses some problems if the nut is to be removed frequently during maintenance. Many specifications state that the self-locking nuts should be capable of removal from and replacement on the same threaded member at least fifteen times, but most are removed and replaced far more often."**

Many of the **lock-nuts in use today** have been degraded by reuse to where they **no longer provide the minimum locking torque required by government specifications.**

## The TRIDAIR FlatBeam solution.

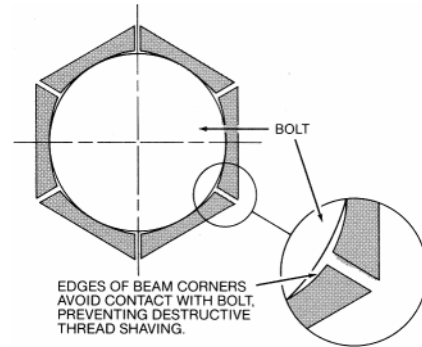
The TRIDAIR FlatBeam lock-nut represents a **radical improvement.** With the unique, patented flat beam design, the **nut maintains locking torque values specified in MIL-N-25027 through 250 seated reuse cycles - over 16 times greater than other lock-nuts.** This high cycle life virtually eliminates the possibility of a nut losing its locking torque because of reuse, in many cases for the life of the application.

# Unique flexible beam design of the Tridair FlatBeam Lock-Nut



The design utilizes six flexible flat beams. These beams provide critical prevailing torque on the bolt *without* placing abnormal wear on bolt threads. Both the nut and the bolt maintain tangential contact points so that the beam corners avoid contact with the bolt. This prevents destructive shaving of the bolt's thread and adds considerably to the life of each bolt as well as the lock-nut.

In tests, the 1/4-28 size FlatBeam Lock-Nut was seated to 125 in. lbs. for each cycle (double the Mil-Spec seating torque for this thread size). It completed 250 installation and removal cycles using an average of just two bolts.



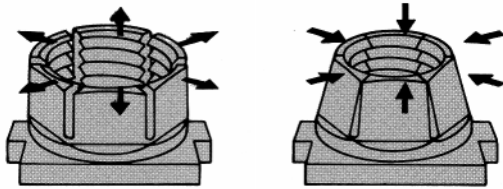
The Tridair flat beam lock-nut will not shave the threads of a bolt because of the deflected beam design. Further, the loading of the thread by the bolt will be more evenly distributed through the threads. Thus, it will maintain its self-locking capability through a much longer period.

## Compare the Specifications

SPEC.	DATE	THREAD SIZE	TORQUE (INCH POUNDS)			NO. OF SEATED CYCLES	TIME VIBRATION	TEMP. (F)
			MAX.	MIN.	SEATING			
AN-N-5	1945	1/4-28	30	3.7	None	None	1 hr.	250°
MIL-N-25027	1955 approx.	1/4-28	30	3.5	None	None	30,000 cycles	250° 450° 800°
NAS3350	1963	1/4-28	30	3.5	94	15	30,000 cycles	450° 800°
MIL-N-85644 proposed	1984	1/4-28	30	3.5	80	50	30,000 cycles	450°
FlatBeam Lock-Nut	1985	1/4-28	30	3.5	125	250	30,000 cycles	450°

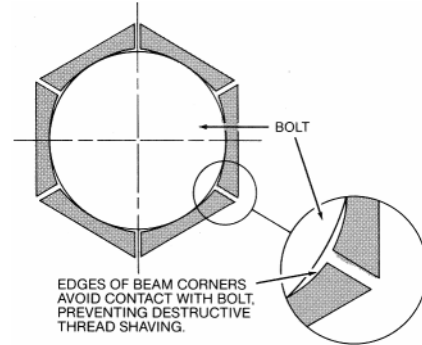
See pages 2 and 3 for Selector Guide

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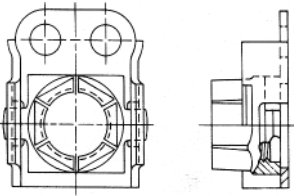
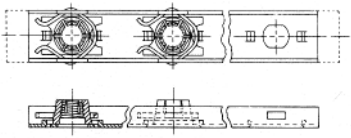
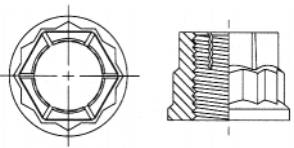
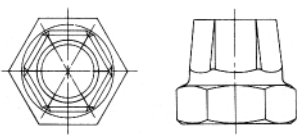
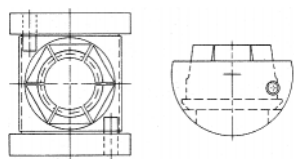
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			MAX.	MIN.	SEATING			
AN-N-5	1945	1/4-28	30	3.7	None	None	1 hr.	250°
MIL-N-25027	1955 approx.	1/4-28	30	3.5	None	None	30,000 cycles	250° 450° 800°
NAS3350	1963	1/4-28	30	3.5	94	15	30,000 cycles	450° 800°
MIL-N-85644 proposed	1984	1/4-28	30	3.5	80	50	30,000 cycles	450°
FlatBeam Lock-Nut	1985	1/4-28	30	3.5	125	250	30,000 cycles	450°

See pages 2 and 3 for Selector Guide

# Selector Guide

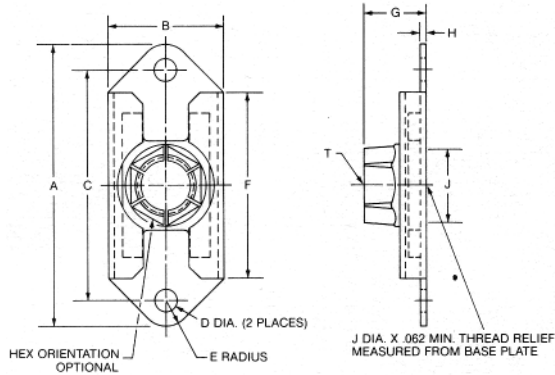
Type	Nut Material	Thread Sizes	Series No.	Page No.
 <p>Floating Nut Plate, 2 Lug, Side by Side, Reduced Rivet Spacing</p>	4140 or 8740 Alloy Steel per MIL-S-5626 or MIL-S-6049	.1900-32 UNJF-3B .2500-28 UNJF-3B .3125-24 UNJF-3B	FBL10018	7
 <p>Gang Channel, Variable Counterbored</p>		.1900-32 UNJF-3B .2500-28 UNJF-3B .3125-24 UNJF-3B	FBL10050	8-9
 <p>Double Hex, Silver-Plated Thread</p>	A286 CRES per AMS 5737	.2500-32 UNJF-3B .3125-28 UNJF-3B .3750-24 UNJF-3B	FBN12011	10
 <p>Hex Nut, Silver-Plated Thread</p>		.1900-32 UNJF-3B .2500-28 UNJF-3B .3125-24 UNJF-3B	FBL10034	10
 <p>Barrel Nut</p>	4140 or 8740 Alloy Steel per MIL-S-5626 or MIL-S-6049	.2500-28 UNJF-3B .3125-24 UNJF-3B	FBL10030	11

### Standards or Specials:

Our standard line only is shown in this catalog. However, many different modifications, or different configurations can be designed to suit your specific application. Call or write for your special problem. See phone numbers and address on the back side of this catalog.

# Floating Nut Plate, 2 Lug

## FBL10001 Series



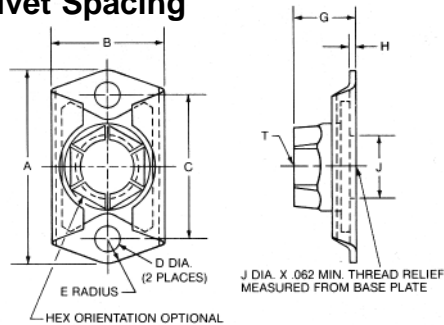
**Notes:**

1. Float of nut portion of assembly is 0.030 minimum radially from centered position. Nut body is capable of engagement with a bolt in the maximum misalignment position.
2. Nut plates are similar to the dimensional envelope specified in NAS 686 and MS 21059.
3. Shape within envelope shown optional.

PART NO.	T THREADSIZE	A MAX.	B MAX.	C ±0.002	D +0.005 -0.000	E MIN.	F MAX.	G MAX.	H MAX.	J DIA. MIN.
FBL10001-3	.1900-32 UNJF-3B	0.948	0.425	0.688	0.098	0.100	0.590	0.250	0.032	0.194
FBL10001-4	.2500-28 UNJF-3B	1.292	0.516	1.000	0.098	0.100	0.870	0.281	0.032	0.254
FBL10001-5	.3125-24 UNJF-3B	1.292	0.609	1.000	0.130	0.125	0.870	0.328	0.045	0.317
FBL10001-6	.3750-24 UNJF-3B	1.292	0.680	1.000	0.130	0.125	0.870	0.344	0.055	0.379

## FBL10002 Series

### Reduced Rivet Spacing



**Notes:**

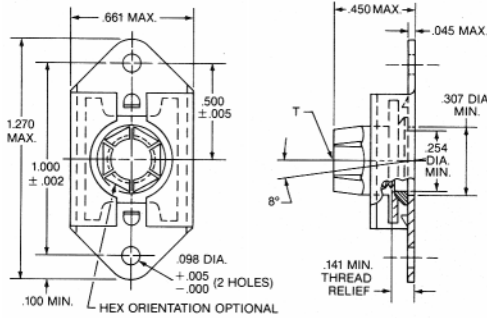
1. Float of nut portion of assembly is 0.020 minimum radially from centered position. Nut body is capable of engagement with a bolt in the maximum misaligned position.
2. Nut plates are similar to the dimensional envelope specified in NAS 1068 and MS 21075.
3. Shape within envelope shown optional.

PART NO.	T THREAD SIZE	A MAX.	B MAX.	C ±0.002	D +0.005 -0.000	E MIN.	G MAX.	H MAX.	J DIA. MIN.
FBL10002-3	.1900-32 UNJF-3B	0.739	0.416	0.500	0.098	0.100	0.250	0.032	0.194
FBL10002-4	.2500-28 UNJF-3B	0.801	0.500	0.562	0.098	0.100	0.281	0.032	0.254
FBL10002-5	.3125-24 UNJF-3B	1.010	0.581	0.718	0.130	0.117	0.328	0.045	0.317

Dash No.	FBL10001 Series		FBL10002 Series	
	SEATING TORQUE (MAXIMUM)	WEIGHT LBS./100 MAXIMUM	SEATING TORQUE (MAXIMUM)	WEIGHT LBS./100 MAXIMUM
-3	36.0 IN-LBS	0.41	36.0 IN-LBS	0.39
-4	60.0 IN-LBS	0.90	60.0 IN-LBS	0.69
-5	120.0 IN-LBS	1.26	120.0 IN-LBS	1.10
-6	160 IN-LBS	1.55	-	-

# Floating Nut Plate, 2 Lug

## FBL10021-4 Self-Aligning



### Notes:

1. Float of nut portion of assembly is 0.025 minimum radially from centered position. Nut body is capable of engagement with a bolt in the maximum misaligned position.
2. Shape within envelope shown optional.
3. Nut plate is similar to the dimensional envelope specified in NAS 1765.

PART NO.	T THREADSIZE	SEATING TORQUE (MAXIMUM)	APPROX. WEIGHT LBS./100
FBL10021-4	.2500-28 UNJF-3B	125.0 IN-LBS	1.48

### Material for all versions on page 4 and 5.

**Nut:** 4140 or 8740 Alloy Steel per MIL-S-5626 or MIL-S-6049; or C1050 per AMS 5085. (Cadmium plated per QQ-P-416, Type I, Class 2, dry film lube per MIL-L-46010.)

**Heat Treat:** Per MIL-H-6875.

**Cage:** 300 Series CRES per MIL-S-5059. (Passivated per QQ-P-35.)

**Spherical Washer (for Self-Aligning Version Part No. FBL10021-4 only):** 4140 or 8740 Alloy Steel per MIL-S-5626 or MIL-S-6049. (Cadmium plated per QQ-P-416, Type I, Class 2, dry film lube per MIL-L-46010.)

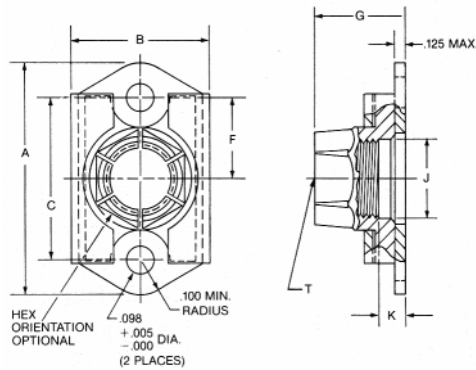
### Notes for all versions on page 4 and 5.

1. Anti-seize compound per MIL-A-907 is added to internal thread.
2. The assembly provides a bearing surface for the nut within the cage.
3. Nut pushout and torque-out are as specified in MIL-N-25027.
4. Threads per MIL-S-8879 except in locking area and prior to lubrication.
5. Minimum assembly height not specified, limited only by strength requirements.
6. Locking torque: The nut element of these assemblies shall be capable of 250 seated, usable cycles when tested per the requirements of CAL-STD-0232.



# Miniature Floating Nut Plate, 2 Lug

## FBL10015 Series Variable Counterbored



### Notes:

Float of nut portion of assembly is 0.020 minimum radially from centered position. Nut body is capable of engagement with a bolt in the maximum misaligned position.

PART NO.	T THREADSIZE	A MAX.	B MAX.	C ±0.002	F ±0.005	G MAX.	J DIA. MIN.	K +0.010 -0.000	APPROX. WEIGHT LBS./100
FBL10015-3-2	.1900-32 UNJF-3B	0.729	0.416	0.500	0.250	0.312	0.194	0.125	0.48
FBL10015-3-3						0.375		0.188	0.53
FBL10015-3-4						0.438		0.250	0.58
FBL10015-3-5						0.500		0.312	0.63
FBL10015-3-6						0.562		0.375	0.68
FBL10015-3-7						0.625		0.437	0.73
FBL10015-3-8						0.687		0.500	0.78
FBL10015-4-2						.2500-28 UNJF-3B		0.791	0.500
FBL10015-4-3	0.411	0.188	0.70						
FBL10015-4-4	0.475	0.250	0.76						
FBL10015-4-5	0.536	0.312	0.82						
FBL10015-4-6	0.599	0.375	0.88						
FBL10015-4-7	0.647	0.437	0.94						
FBL10015-4-8	0.710	0.500	1.00						

### Notes:

1. Anti-seize compound per MIL-A-907 applied to internal threads.
2. Mechanical properties of nut plate meets the requirements of procurement specification MIL-N-25027.
3. The assembly provides a bearing surface for the nut within the cage.
4. Shape within envelope shown optional.
5. Threads per MIL-S-8879 except in locking area and prior to lubrication.
6. Minimum assembly height (G) not specified, limited only by strength requirements.
7. Locking torque: The nut element of these assemblies shall be capable of 250 seated, usable cycles when tested per the requirements of CAL-STD-0232.

### Material for all versions on page 4 and 5.

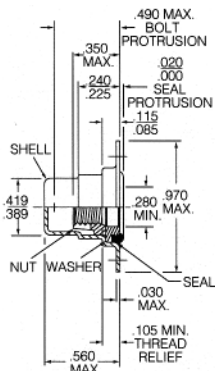
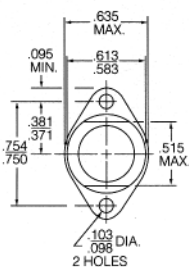
**Nut:** 4140 or 8740 Alloy Steel per MIL-S-5626 or MIL-S-6049. (Cadmium plated per QQ-P-416, Type I, Class 2, dry film lube per MIL-L-46010.)

**Heat Treat:** Per MIL-H-6875.

**Cage:** 300 Series CRES per MIL-S-5059. (Passivated per QQ-P-35).

# Floating Nut Plate, 2 Lug

## FBL10100-4 Domed, Self-Sealing



### Notes:

Float of nut portion of assembly is 0.025 minimum radially from centered position. Nut body is capable of engagement with a bolt in the maximum misaligned position.

PART NO.	T THREADSIZE	TENSILE STRENGTH LBS. MIN.
FBL10100-4	.2500-28 UNJF-3B	4580

### Material:

**Shell:** A286 CRES per AMS 5525 (Passivated per QQ-P-35.)

**Nut:** 4130 Alloy Steel per MIL-S-6758 or 8740 Alloy Steel per MIL-S-6049. (Cadmium plated per QQ-P-416, Type II, Class 2.)

**Washer:** C1117 per QQ-S-633, 4130 per AMS 6350 or AMS 6370, or 4340 per AMS 6415. (Cadmium plated per QQ-P-416, Type II, Class 2.)

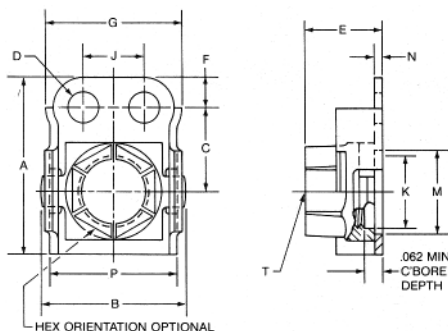
**Seal:** Fluorosilicone rubber.

**Lubrication (Nut):** Dry film lube per MIL-L-46010.

### Notes:

1. Magnetic permeability shall be less than 2.0 (air=1.0) for a field strength of H200 oersteds using a magnetic permeability indicator per MIL-I-17214 or equivalent.
2. Locking torque: The nut element of these assemblies is capable of 250 seated cycles (seated at 100 in. lbs.) when tested per the requirements of MIL-N-25027.
3. Threads per MIL-S-8879 except in locking area and prior to lubrication.
4. Anti-seize compound per MIL-A-907 is added to internal thread.

## FBL10018 Series Side By Side, Reduced Rivet Space



### Notes:

1. Float of nut portion of assembly is 0.020 minimum radially from centered position. Nut body is capable of engagement with a bolt in the maximum misaligned position.
2. Nut plates are similar to the dimensional envelope specified in NAS 1789.
3. Locking torque: The nut element of these assemblies shall be capable of 250 seated, usable cycles when tested per the requirements of CAL-STD-0232.

PART NO.	T THREADSIZE	A MAX.	B +0.000 -0.050	C +0.010	D +0.005 -0.000	E MAX.	F MIN.	G MAX.	J +0.002	K DIA. MIN.	M DIA. MAX.	N MAX.	P MAX.
FBL10018-3	.1900-32 UNJF-3B	0.525	0.460	0.250	0.098	0.250	0.100	0.490	0.219	0.194	0.240	0.032	0.409
FBL10018-4	.2500-28 UNJF-3B	0.617	0.562	0.281	0.098	0.281	0.100	0.502	0.219	0.254	0.300	0.032	0.526
FBL10018-5	.3125-24 UNJF-3B	0.767	0.619	0.359	0.130	0.328	0.125	0.609	0.269	0.317	0.357	0.045	0.588

### Notes:

1. Anti-seize compound per MIL-A-907 applied to internal thread.
2. Mechanical properties of nut plate meets the requirements of procurement specification MIL-N-25027.
3. The assembly provides a bearing surface for the nut within the cage.
4. Shape within envelope shown optional.
5. Threads per MIL-S-8879 except in locking area and prior to lubrication.
6. Minimum assembly height (E) not specified, limited only by strength requirements.

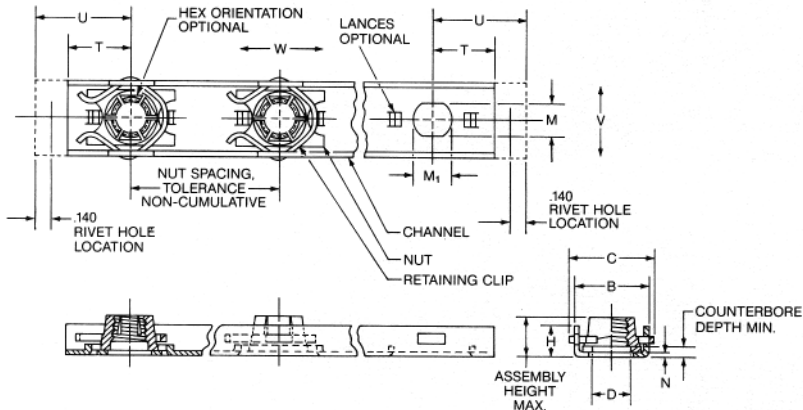
### Material:

**Nut:** 4140 or 8740 Alloy Steel per MIL-S-5626 or MIL-S-6049. (Cadmium plated per QQ-P-416, Type II, Class 2, dry film lube per MIL-L-46010.)

**Cage:** 17-7 pH CRES per MIL-S-25043 or AMS 5528. (Passivated per QQ-P-35.)

# Gang Channel

## FBL10050 Series



### Material:

**Nut:** 4140 or 8740 Alloy Steel per MIL-S-5626 or MIL-S-6049.

**Channel:** 7075 Aluminum Alloy per QQ-A-200/11, QQ-A-250/12 or QQ-A-250/13.

**Clip:** 302 CRES Steel per AMS 5688 or ARMCO 18-2MN\* CRES.

### Heat Treat:

**Nut:** Per MIL-H-6875.

**Channel:** Aged to T6 temp per MIL-H-6088.

### Finish:

**Nut:** Cadmium plated per QQ-P-416, Type I, Class 2, and dry film lube per MIL-L-46010.

**Channel:** Anodized per MIL-A-8625, Type II, Class 1.

**Clip:** Passivated per QQ-P-35.

THREADSIZE	COUNTERBORE DEPTH	ASSEMBLY PART NUMBER	ASSEMBLY HEIGHT MAX.	B MAX.	C REF.	D DIA. MIN.	H MAX.	M ±0.005	M <sub>1</sub> ±0.005	N REF.
.1900-32 UNJF-3B	0.070	FBL10050-31-( ) ( ) ( )	0.250	0.445	0.484	0.194	0.250	0.224	0.255	0.040
	0.125	FBL10050-32-( ) ( ) ( )	0.312							
	0.188	FBL10050-33-( ) ( ) ( )	0.375							
	0.250	FBL10050-34-( ) ( ) ( )	0.438							
	0.313	FBL10050-35-( ) ( ) ( )	0.500							
	0.375	FBL10050-36-( ) ( ) ( )	0.562							
.2500-28 UNJF-3B	0.070	FBL10050-41-( ) ( ) ( )	0.298	0.547	0.584	0.254	0.298	0.285	0.325	0.040
	0.125	FBL10050-42-( ) ( ) ( )	0.360							
	0.188	FBL10050-43-( ) ( ) ( )	0.422							
	0.250	FBL10050-44-( ) ( ) ( )	0.484							
	0.313	FBL10050-45-( ) ( ) ( )	0.546							
	0.375	FBL10050-46-( ) ( ) ( )	0.608							
.3125-24 UNJF-3B	0.070	FBL10050-51-( ) ( ) ( )	0.347	0.643	0.720	0.317	0.344	0.348	0.386	0.050
	0.125	FBL10050-52-( ) ( ) ( )	0.403							
	0.188	FBL10050-53-( ) ( ) ( )	0.464							
	0.250	FBL10050-54-( ) ( ) ( )	0.527							
	0.313	FBL10050-55-( ) ( ) ( )	0.589							
	0.375	FBL10050-56-( ) ( ) ( )	0.652							

\*Note: "ARMCO 18-2MN" is a registered trademark of ARMCO Steel Corporation, Middletown, Ohio.

# Gang Channel

## FBL10050 Series

### Nut Spacing

For Three Thread Sizes (Use for 2nd dash number in assembly part number)

NUT SPACING +0.010	NUMBER OF NUTS	SECOND DASH NO. FOR THREAD SIZES:		
		.1900-32	.2500-28	.3125-24
0.625	2 TO 115	-5	-	-
0.750	2 TO 96	-6	-6	-
0.875	2 TO 82	-7	-7	-
1.000	2 TO 72	-8	-8	-8
1.125	2 TO 64	-9	-9	-9
1.250	2 TO 57	-10	-10	-10
1.375	2 TO 52	-11	-11	-11
1.500	2 TO 48	-12	-12	-12
1.750	2 TO 41	-14	-14	-14
2.000	2 TO 36	-16	-16	-16
2.250	2 TO 32	-18	-18	-18
2.500	2 TO 28	-20	-20	-20
3.000	2 TO 24	-24	-24	-24

### Notes:

1. Threads per MIL-S-8879 except in locking area and prior to lubrication.
2. Anti-seize compound per MIL-A-907 applied to internal thread.
3. Float, minimum total; "V" = 0.030; "W" = 0.060. Nut shall be capable of engagement with a bolt in the maximum misaligned position.
4. The assembly shall provide a bearing surface for the nut within the channel.
5. Minimum Assembly Height is not specified, limited only by strength requirements.
6. Shape within the envelope shown optional.
7. Locking torque: The nut element of these assemblies shall be capable of 250 seated, usable cycles when tested per the requirements of CAL-STD-0232.

### Part Number Callout Example:

**FBL10050 - ( ) ( ) - ( ) ( ) ( ) ( )**

THREADSIZE	T +0.030 -0.000	U +0.030 -0.000	REPLACEMENT COMPONENTS	
			NUT ELEMENT	RETAINING CLIP
.1900-32 UNJF-3B	0.350	0.590	FBL10041-3-1	FBL10059-3R
			FBL10041-3-2	
			FBL10041-3-3	
			FBL10041-3-4	
			FBL10041-3-5	
			FBL10041-3-6	
.2500-28 UNJF-3B	0.400	0.640	FBL10041-4-1	FBL-10059-4R
			FBL10041-4-2	
			FBL10041-4-3	
			FBL10041-4-4	
			FBL10041-4-5	
			FBL10041-4-6	
.3125-24 UNJF-3B	0.450	0.720	FBL10041-5-1	FBL10059-5R
			FBL10041-5-2	
			FBL10041-5-3	
			FBL10041-5-4	
			FBL10041-5-5	
			FBL10041-5-6	

Number of Nuts.  
(To be used only when less than the maximum number of nuts shown in nut spacing table are required.) Prefix '0' if less than '10.' Example: FBL10050-( ) ( ) ( ) 05.

Second Dash No. for nut spacing.

'Dash' signifies channel having cut-offs per dimension 'T' on both ends.

Insert letter 'L' in lieu of dash to signify a channel having cut-offs per dimension 'U' on both ends.

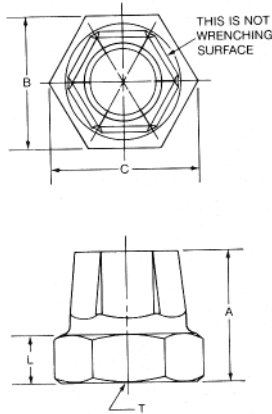
Insert letter 'F' in lieu of dash to signify a channel having cut-offs per dimension 'T' on one end and cut-off per dimension 'U' on the opposite end.

Two digits shown as 1st dash number tabulated; first digit refers to thread size; second digit refers to counterbore depth.

Basic part number

# Nuts

## FBL10034 Series Hex Nut, Silver-Plated Thread



PART NO.	T THREADSIZE	A MAX.	L REF.	C MIN.	B	APPROX. WEIGHT LBS./100
FBL10034-3	.1900-32 UNJF-3B	0.350	0.125	0.413	0.377-0.365	0.70
FBL10034-4	.2500-28 UNJF-3B	0.435	0.156	0.488	0.440-0.428	0.90
FBL10034-5	.3125-24 UNJF-3B	0.537	0.203	0.557	0.502-0.490	0.140

### Material:

A286 CRES, Competition per AMS 5731 or AMS 5737.  
(Passivated per QQ-P-35 and Silver Plated per AMS 2410 on threads only.)

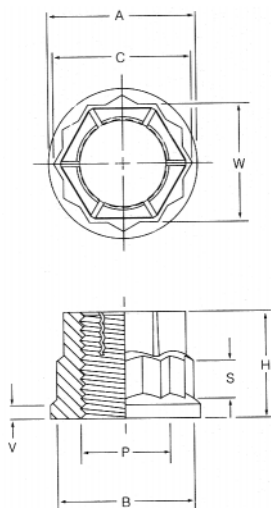
### Heat Treat:

Per MIL-H-6875.

### Notes:

1. Threads per MIL-S-8879 except in locking area and prior to lubrication.
2. Reusability to be determined on an individual basis due to variations in usage.
3. Anti-seize compound per MIL-A-907 applied to internal thread.

## FBN12011 Series Double Hex Nut Silver-Plated Thread



PART NO.	T THREADSIZE	A MAX.	B MIN.	C MIN.	H MAX.	P MAX.	S MIN.	V REF.	W
FBN12011-4	.2500-28 UNJF-3B	0.434	0.394	0.348	0.328	0.280	0.095	0.050	0.313-0.305
FBN12011-5	.3125-24 UNJF-3B	0.532	0.492	0.420	0.360	0.342	0.110	0.060	0.376-0.367
FBN12011-6	.3750-24 UNJF-3B	0.631	0.591	0.491	0.458	0.405	0.115	0.070	0.439-0.430

### Material:

A286 CRES, Competition per AMS 5731 or AMS 5737.  
(Passivated per QQ-P-35 and Silver Plated per AMS 2410.)

### Heat Treat:

Per MIL-H-6875.

### Lubrication:

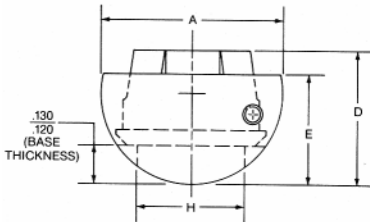
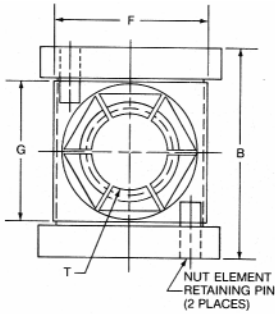
Dry film lubricant coated.

### Notes:

1. Threads per MIL-S-8879 except in locking area and prior to lubrication.
2. Reusability to be determined on an individual basis due to variations in usage.
3. Anti-seize compound per MIL-A-907 applied to internal thread.

# Barrel Nuts

## FBL10030 Series



### Material:

**Nut:** 4140 pr 8740 Alloy Steel per MIL-S-5625 or MIL-S-6049. (Cadmium plated per QQ-P-416, Type I, Class 2.)

Dry film lube per MIL-L-40610.

Anti-seize compound per MIL-A-907 applied to internal threads.

**Barrel:** 4140 Allot Steel per MIL-S-5626 (Cadmium plated per QQ-P-416, Type II, Class 2.)

**Retaining Pin:** AISI 420 CRES. (Passivated per QQ-P-35.)

### Heat Treat:

**Nut:** Per MIL-H-6875.

**Barrel:** Per MIL-H-6875.

### Locking Element:

The locking feature is capable of 250 seated usable cycles within the torque limits of MIL-N-25027 when tested at room temperature with 160 KSI minimum ultimate tensile strength, cadmium plated, alloy steel bolts.

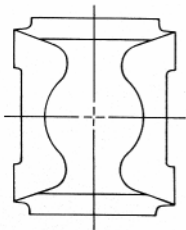
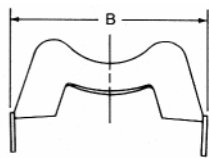
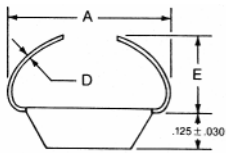
This barrel nut is similar to the dimensional envelope specified in NAS 577.

### Threads:

Per MIL-S-8879, except in locking area and prior to lubrication.

PART NO.	T THREADSIZE	A DIA. +0.000 -0.003	B	D MAX.	E +0.005	F REF.	G REF.	H ±0.005	SEATING TORQUE INCH/LBS.
FBN10030-4	.2500-28 UNJF-3B	0.528	0.625	0.406	0.315	0.45	0.44	0.286	60.0
FBN10030-5	.3125-24 UNJF-3B	0.590	0.688	0.468	0.355	0.49	0.46	0.349	120.0

## Retainers for Use with FBL10030 Series Barrel Nuts Above



To be used with Barrel Nut above to allow prepositioning of the assembly within its prepared hole.

### Material:

Steel, AISI C-1035, AISI C-1050 or AISI C-1060.

### Heat Treat:

Rockwell 'C' 40 minimum per MIL-H-6875.

### Finish:

Cadmium plated per QQ-P-416, Type II, Class 2.

PART NO.	A ±0.020	B ±0.020	D ±0.003	E MIN.
FBN10030-4RET	0.478	0.615	0.010	0.223
FBN10030-5RET	0.534	0.678	0.012	0.258

# Metric/Decimal Equivalents

DRILL SIZES	M/M	DECI-MAL	DRILL SIZES	M/M	DECI-MAL	DRILL SIZES	M/M	DECI-MAL	DRILL SIZES	M/M	DECI-MAL
-	.1	.0039	45	-	.0820	5	-	.20555	7/16	-	.4375
-	.2	.0079	44	-	.0860	4	-	.2090	29/64	-	.4531
-	.3	.0118	43	-	.0890	3	-	.2130	15/32	-	.4687
80	-	0.135	42	-	.0935	7/32	-	.2187	-	12.	.4724
79	-	0.145	3/32	-	.0937	2	-	.2210	31/64	-	.4844
1/64	-	.0156	41	-	.0960	1	-	.2280	1/2	-	.5000
-	.4	.0157	40	-	.0980	A	-	.2340	-	13.	.5118
78	-	.0160	39	-	.0995	15/64	-	.2344	33/64	-	.5156
77	-	.0180	38	-	.1015	-	6.	.2362	17/32	-	.5312
-	.5	.0197	37	-	.1040	B	-	.2380	35/64	-	.5469
76	-	.0200	36	-	.1065	C	-	.2420	-	14.	.5512
75	-	.0210	7/64	-	.1094	D	-	.2460	9/16	-	.5625
74	-	.0225	35	-	.1100	1/4	-	.2500	37/64	-	.5781
-	.6	.0236	34	-	.1110	E	-	.2500	-	15.	.5906
73	-	.0240	33	-	.1130	F	-	.2570	19/32	-	.5937
72	-	.0250	32	-	.1160	G	-	.2610	39/64	-	.6094
71	-	.0260	-	3.	.1181	17/64	-	.2656	5/8	-	.6250
-	.7	.0276	31	-	.1200	H	-	.2660	-	16.	.6299
70	-	.0280	1/8	-	.1250	I	-	.2720	41/64	-	.6406
69	-	.0292	30	-	.1285	-	7	.2756	21/32	-	.6562
68	-	.0310	29	-	.1360	J	-	.2770	-	17.	.6693
1/32	-	.0312	28	-	.1405	K	-	.2810	43/64	-	.6719
-	.8	.0315	9/64	-	.1406	9-32	-	.2812	11/16	-	.6875
67	-	.0320	27	-	.1440	L	-	.2900	45/64	-	.7031
66	-	.0330	26	-	.1470	M	-	.2956	-	18.	.7087
65	-	.0350	25	-	.1495	19/64	-	.2969	23/32	-	.7187
-	.9	.0354	24	-	.1520	N	-	.3020	47/64	-	.7344
64	-	.0360	23	-	.1540	5/16	-	.3125	-	19.	.7480
63	-	.0370	5/32	-	.1562	-	8.	.3150	3/4	-	.7500
62	-	.0380	22	-	.1570	O	-	.3160	49/64	-	.7656
61	-	.0390	-	4.	.1575	P	-	.3230	25/32	-	.7812
-	1.	.0394	21	-	.1590	21/64	-	.3281	-	20.	.7874
60	-	.0400	20	-	.1610	Q	-	.3320	51/64	-	.7969
59	-	.0410	19	-	.1660	R	-	.3390	13/16	-	.8125
58	-	.0420	18	-	.1695	11/32	-	.3437	-	21.	.8268
57	-	.0430	11/64	-	.1719	S	-	.3480	53/64	-	.8281
56	-	.0465	17	-	.1730	-	9.	.3543	27/32	-	.8437
3/64	-	.0469	16	-	.1770	T	-	.3580	55/64	-	.8594
55	-	.0520	15	-	.1800	23/64	-	.3594	-	22.	.8661
54	-	.0550	14	-	.1820	U	-	.3680	7/8	-	.8750
53	-	.0595	13	-	.1850	3/8	-	.3750	57/64	-	.8906
1/16	-	.0625	3/16	-	.1875	V	-	.3770	-	23.	.9055
52	-	.0635	12	-	.1890	W	-	.3860	29/32	-	.9062
51	-	.0670	11	-	.1910	25/64	-	.3906	59/64	-	.9219
50	-	.0700	10	-	.1935	-	10.	.3937	15/16	-	.9375
49	-	.0730	9	-	.1960	X	-	.3970	-	24.	.9449
48	-	.0760	-	5.	.1968	Y	-	.4040	61/64	-	.9531
5/64	-	.0781	8	-	.1990	13/32	-	.4062	31/32	-	.9687
47	-	.0785	7	-	.2010	Z	-	.4130	-	25.	.9842
-	2.	.0787	13/64	-	.2031	27/64	-	.4219	63/64	-	.9844
46	-	.0810	6	-	.2040	-	11.	.4331	1	25.4	1.0000

## Conversion Tables

### General Data

- 1 INCH [IN.] = 25.4 MILLIMETERS  
 1 MILLIMETER [mm] = 0.03937 INCHES  
 1 MEGAPASCAL [MPa] = 145.04 P.S.I.  
 1 P.S.I. = 0.00689 MPa  
 1 NEWTOM-METER [N.m.] = 8.85 IN. LBS.  
 1 INCH-POUND [IN. LB.] = 0.113 N.m.

### Temperatures

Celsius	Fahrenheit
235°C	455°F
260°C	500°F
315°C	600°F
650°C	1200°F

$$1.8 \times t^{\circ}\text{C} + 32 = t^{\circ}\text{F}$$

### Stress (Force per Unit Area)

Megapascal	Pounds/Inch
170 MPa	24,700 PSI
200 MPa	29,000 PSI
220 MPa	31,900 PSI
260 MPa	37,700 PSI
900 MPa	130,500 PSI
1100 MPa	159,500 PSI

$$\text{MPa} \times 145 = \text{PSI}$$

### Lockring / Breakaway Torque

Thread Size	Max. Locking Torque		Min. Breakaway Torque	
	Nm	In. Lbs.	Nm	In. Lbs.
M2.5	0.45	4.0	0.06	0.5
M3	0.6	5.3	0.09	0.8
M3.5	0.75	6.6	0.12	1.1
M4	0.9	8.0	0.14	1.2
M5	1.6	14.0	0.23	2.0
M6	2.8	25.0	0.36	3.2
M7	4.3	38.0	0.54	4.8
M8	5.8	51.0	0.71	6.3
M10	9.6	85.0	1.16	10.0
M12	14.8	131.0	1.77	16.0
M14	22.6	200.0	2.71	24.0
M16	35.0	310.0	3.72	33.0
M18	43.5	385.0	5.20	46.0
M20	48.5	429.0	6.00	53.0
M22	64.8	573.0	7.40	85.0
M24	87.2	772.0	9.50	84.0

## United States Customer Teams

### • REGIONAL OFFICES •

#### Customer Team Washington D.C.

45025 Aviation Drive, Suite 2  
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Fax: 703.742.4451

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Arlington, TX 76015 USA  
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Fax: 817.417.0678

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Fax: 310.784.6665

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Lynnwood, WA 98037 USA  
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Fax: 425.744.1283

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Fax: 817.417.4129

#### Customer Team-Worldwide Distribution Los Angeles

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Fax: 310.784.6608

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135 North Unruh Avenue  
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Fax: 626.937.5454

#### Santa Ana

*Deltron / Rosán*  
3130 West Harvard Street  
Santa Ana, CA 92704 USA  
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#### South Bay

*Camloc / RAM / Tridair / Voi-Shan*  
3000 West Lomita Boulevard  
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Fax: 310.784.6606

#### Kelkheim

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Fax: 49.6195.5647

#### Guarda

*Eurosim / Simmonds*  
Parque Industrial da Guarda  
Lotes 53/54 6300 Guarda Portugal  
Tel: 35.10.712.22007

#### Fullerton

*Kaynar / Eagle*  
800 S. State College Blvd.  
Fullerton, CA 92831 USA  
Tel: 714.871.1550  
Fax: 714.680.0175

#### Fullerton: Plant 2

*K-Fast / APS*  
801 S. Placentia Ave.  
Fullerton, CA 92831 USA  
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Fax: 714.278.9900

#### Placentia

*Microdot*  
190 West Cowther Avenue  
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Tel: 714.870.6650  
Fax: 714.524.5346

#### Stoughton

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44 Campanelli Parkway  
Stoughton, MA 02072 USA  
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#### Oakleigh

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Fax: 61.3.9563.1980

#### Fémipari KFT .

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Dózsa György u. 2/a  
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Fax: 36.06.88.265.802

#### Industry: Temple

*Screwcorp / Voi-Shan*  
13001 Temple Avenue  
City of Industry, CA 91746 USA  
Tel: 626.369.3333  
Fax: 626.369.3416

#### Conches

*Mecaero*  
Zone Industrielle - BP 9  
27910 Conches, France  
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Fax: 33.32.30.98.06

## Integrated Product Service Solutions

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20660 Nordhoff Street  
Chatsworth, CA 91311 USA  
Tel: 818.998.1412  
Fax: 818.407.5945

#### Part of Fairchild Fasteners

#### Fairchild Fasteners Direct: Germany

Robert-Bosch  
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Fax: 49.8251.513.11

#### Part of Fairchild Fasteners

#### Fairchild Fasteners Direct: France

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France  
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Fax: 33.1.34.32.55.30

#### Part of Fairchild Fasteners